(3) Release the pendulum from a height sufficient to allow it to fall freely to achieve an impact velocity of 6.05 ±0.1 m/s measured at the center of the pendulum accelerometer (Figure 22) at the time the pendulum makes contact with its decelerating mechanism. The velocity-time history of the pendulum falls inside the corridor determined by the upper and lower boundaries specified in Table 1 to paragraph (b) of this section;

(4) Allow the lumbar spine to flex without the lumbar spine or the headform making contact with any object;

(5) Time zero is defined in § 572.189(k).

TABLE 1 TO PARAGRAPH (b)—ES–2RE LUMBAR SPINE CERTIFICATION PENDULUM VELOCITY CORRIDOR

Upper boundary		Lower boundary	
Time (ms)	Velocity (m/s)	Time (ms)	Velocity (m/s)
1.0	0.00	0.0	−0.05
3.7	−0.24	2.7	−0.425
27.0	−5.80	24.5	−6.50
		30.0	−6.50

(c) *Performance criteria.* (1) The pendulum deceleration pulse is to be characterized in terms of decrease in velocity as determined by integrating the filtered pendulum acceleration response from time-zero.

(2) The maximum rotation in the lateral direction of the reference plane of the headform (175–9000) as shown in Figure U2–B in Appendix A to this subpart, shall be 45 to 55 degrees with respect to the longitudinal axis of the pendulum occurring between 39 and 53 ms from time zero. Rotation of the headform-neck assembly shall be measured with potentiometers specified in § 572.189(c), installed as shown in drawing 175–9000, and calculated per procedure specified in Figure U2–B in Appendix A to this subpart.

(3) The decaying headform rotation vs. time curve shall cross the zero angle with respect to its initial position at impact relative to the pendulum centerline between 37 ms to 57 ms after the time the peak translation-rotation value is reached.

§ 572.188 Pelvis.

(a) The pelvis (175–6000) is part of the torso assembly shown in drawing 175–0000. The pelvis is equipped with a pubic symphysis load sensor in conformance with § 572.189(f) and mounted as shown in drawing (175–0000 sheet 4). When subjected to tests procedures specified in paragraph (b) of this section, the pelvis assembly shall meet performance requirements specified in paragraph (c) of this section.

(b) *Test procedure.*

(1) Soak the dummy assembly (175–0000) without suit (175–8000) and shoulder foam pad (175–3010) as specified in § 572.189(n);

(2) The dummy is seated as specified in Figure U6 in Appendix A to this subpart;

(3) The pelvis impactor is the same as specified in § 572.189(a);

(4) The impactor is guided, if needed, so that at contact with the pelvis its longitudinal axis is within ± 0.5 degrees of a horizontal plane and perpendicular to the midsagittal plane of the dummy and the centerpoint on the impactor's face is within 5 mm of the center of the H-point in the pelvis, as shown in Figure U5 in Appendix A to this subpart;

(5) The impactor impacts the dummy's pelvis at 4.3 ±0.1 m/s.

(c) *Performance criteria.*

(1) The impactor force (probe acceleration multiplied by its mass) shall be not less than 4,700 N, and not more than 5,400 N, occurring between 11.8 ms and 16.1 ms from time zero as defined in § 572.189(k);

(2) The pubic symphysis load, measured with load cell specified in § 572.189(f) shall be not less than 1,230 N and not more than 1,590 N occurring between 12.2 ms and 17.0 ms from time zero as defined in § 572.189(k).

§ 572.189 Instrumentation and test conditions.

(a) The test probe for lateral shoulder, thorax without arm, abdomen, and pelvis impact tests is the same as that specified in § 572.36(a) and the impact probe has a minimum mass moment of inertia in yaw of 9,000 kg-cm^2, a free air resonant frequency not less than 1,000 Hz and the probe's end opposite to the impact face has provisions to mount an accelerometer with its sensitive axis